

Claims

1. An elongated guide wire for use in a surgical or other procedure for accessing a remote site in the body of a human or animal subject, the guide wire defining a longitudinally extending central axis, and extending between a distal end for accessing the remote site and a spaced apart proximal end, a curvature controllable portion being located in the guide wire towards the distal end thereof for offsetting the distal end at an angle relative to the central axis, the curvature controllable portion comprising an elongated curvature inducing first member, and an elongated curvature inducing second member coupled to each other adjacent their distal ends, and extending from their distal ends axially in a proximal direction, and being moveable axially relative to each other for inducing a curved bend in the curvature controllable portion, characterised in that a means is provided for constraining the first and second members to move parallel to each other for inducing the curved bend in the curvature controllable portion.
- 15 2. A guide wire as claimed in Claim 1 characterised in that the first and second members are disposed side by side and are slideably moveable axially relative to each other.
- 20 3. A guide wire as claimed in Claim 1 or 2 characterised in that the means for constraining the first and second members to move parallel to each other comprises a guide tongue extending laterally from the second member and being slideably engageable with an axially extending corresponding guide groove in the first member.
- 25 4. A guide wire as claimed in Claim 3 characterised in that a retaining means is provided for retaining the guide tongue laterally captive in the guide groove.
- 30 5. A guide wire as claimed in Claim 4 characterised in that the retaining means is provided for retaining the guide tongue laterally captive in a plane in which curvature is induceable in the curvature controllable portion.

6. A guide wire as claimed in Claim 4 or 5 characterised in that the retaining means is provided by the transverse cross-section of the guide tongue co-operating with the transverse cross-section of the guide groove.
- 5 7. A guide wire as claimed in any of Claims 3 to 6 characterised in that the guide tongue extends from the second member in a plane parallel to the plane in which curvature is induceable in the curvature controllable portion.
- 10 8. A guide wire as claimed in any of Claims 3 to 7 characterised in that the guide groove is of transverse cross-section which defines the transverse cross-section of the guide tongue.
- 15 9. A guide wire as claimed in any of Claims 3 to 8 characterised in that the guide groove is formed by an elongated guide bore extending axially in the first member, and by a guide slot extending axially along the first member for accommodating the guide tongue into the guide bore.
- 20 10. A guide wire as claimed in Claim 9 characterised in that the transverse width of the guide slot is less than a transverse dimension of the guide bore parallel to the transverse width of the guide slot for retaining the guide tongue laterally captive in the guide groove.
- 25 11. A guide wire as claimed in Claim 9 or 10 characterised in that the guide bore is of circular transverse cross-section.
- 30 12. A guide wire as claimed in any of Claims 9 to 11 characterised in that the guide tongue comprises a guide member slideable in the guide bore, and a coupling member extending through the guide slot for coupling the guide member to the second member.
13. A guide wire as claimed in Claim 12 characterised in that the guide member extends axially the length of the second member.

14. A guide wire as claimed in Claim 12 or 13 characterised in that the coupling member extends axially the length of the second member.
- 5 15. A guide wire as claimed in any preceding claim characterised in that one of the first and second members is of axial length shorter than the axial length of the other of the first and second members for accommodating relative axial movement of one of the first and second members relative to the other.
- 10 16. A guide wire as claimed in Claim 15 characterised in that the axial length of the second member is shorter than the axial length of the first member.
- 15 17. A guide wire as claimed in any preceding claim characterised in that the first and second members define a transverse cross-sectional area having a circular outer periphery.
18. A guide wire as claimed in any preceding claim characterised in that the guide wire comprises an elongated tubular member extending from the proximal end to the distal end.
- 20 19. A guide wire as claimed in Claim 18 characterised in that the first member is formed by the tubular member of the guide wire.
- 25 20. A guide wire as claimed in Claim 18 or 19 characterised in that an operating means is provided at the proximal end of the guide wire for moving one of the first and second members relative to the other for inducing the curved bend in the curvature controllable portion.
- 30 21. A guide wire as claimed in Claim 20 characterised in that a connecting means is provided for connecting the operating means to one of the first and second members.

22. A guide wire as claimed in Claim 17 characterised in that the connecting means is connected to the second member.
23. A guide wire as claimed in Claim 21 or 22 characterised in that the connecting means extends through a bore defined by the tubular member forming the guide wire.
5
24. A guide wire as claimed in any of Claims 21 to 23 characterised in that the connecting means co-operates with the tubular member forming the guide wire, so that the column strength of the connecting means is sufficient for facilitating urging of the second member relative to the first member in both axial directions.
10
25. A guide wire as claimed in any of Claims 21 to 24 characterised in that the connecting means comprises an elongated connecting wire, and the operating means is formed by a portion of the connecting wire extending from the tubular member forming the guide wire, at the proximal end thereof for facilitating urging the guide wire in at least one axial direction for urging the second member in the corresponding axial direction relative to the first member.
15
26. A guide wire as claimed in any of Claims 18 to 25 characterised in that the tubular member forming the guide wire is of a polymer material.
20
27. A guide wire as claimed in any preceding claim characterised in that the curvature controllable portion is located adjacent the distal end of the guide wire.
25
28. A guide wire as claimed in any preceding claim characterised in that the distal end of the first and second members coincides with the distal end of the guide wire.
- 30 29. A guide wire as claimed in any preceding claim characterised in that at least one of the first and second members is of resilient material for resiliently urging the distal end of the guide wire into axial alignment with the central axis of the guide

wire.

30. A guide wire as claimed in any preceding claim characterised in that the first member is of a polymer material.

5

31. A guide wire as claimed in any preceding claim characterised in that the second member is of a polymer material.

10 32. A guide wire as claimed in any preceding claim characterised in that the distal end of the guide wire terminates in a bulbous tip.

33. A guide wire as claimed in Claim 32 characterised in that the bulbous tip is formed by material used for securing the first and second members of the curvature controllable portion together.

15

34. A guide wire as claimed in Claim 32 or 33 characterised in that the bulbous tip defines a hemispherical distal tip.

20

35. A guide wire as claimed in any preceding claim characterised in that a sleeve extends from the distal end of the guide wire axially in a direction towards the proximal end thereof, and the curvature controllable portion being located within the sleeve.

25

36. A guide wire as claimed in Claim 35 characterised in that the sleeve extends from the distal end to a location intermediate the distal end and the proximal end of the guide wire.

37. A guide wire as claimed in Claim 35 or 36 characterised in that the sleeve is formed by a helically wound coil.

30

38. A guide wire as claimed in any of Claims 35 to 37 characterised in that the sleeve is formed by a tightly wound helical coil.

39. A guide wire as claimed in any of Claims 35 to 38 characterised in that the sleeve is of a metallic material.

5 40. A guide wire as claimed in any of Claims 35 to 39 characterised in that the sleeve is of a plastics material.

41. A guide wire as claimed in any of Claims 35 to 40 characterised in that the sleeve is of a plastics material and a metallic material.

10 42. A guide wire as claimed in any of Claims 35 to 41 characterised in that at least a portion of the sleeve is of a radiopaque material adjacent the distal end of the guide wire.

15 43. A guide wire as claimed in any preceding claim characterised in that at least a portion of the guide wire adjacent the distal end thereof is of a radiopaque material.

44. A guide wire as claimed in any preceding claim characterised in that the degree of curvature induced in the curvature controllable portion is proportional to 20 the amount of relative movement between the first and second members.

45. A guide wire as claimed in any preceding claim characterised in that the angle by which the distal end of the guide wire is offset relative to the central axis of the guide wire is proportional to the amount of relative movement between the first 25 and second members.

46. A guide wire as claimed in any preceding claim for use in accessing a remote site in the body of a human or animal subject.

30 47. In combination a catheter for use in a surgical or other procedure for accessing a remote site in the body of a human or animal subject, and an elongated guide wire, characterised in that the guide wire is a guide wire as claimed in any

preceding claim.

48. In combination a catheter for use in a surgical or other procedure for accessing a remote site in the body of a human or animal subject, and an elongated guide wire, the guide wire defining a longitudinally extending central axis, and extending between a distal end for accessing the remote site and a spaced apart proximal end, a curvature controllable portion being located in the guide wire towards the distal end thereof for offsetting the distal end at an angle relative to the central axis, the curvature controllable portion comprising an elongated curvature inducing first member, and an elongated curvature inducing second member coupled to each other adjacent their distal ends, and extending from their distal ends axially in a proximal direction, and being moveable axially relative to each other for inducing a curved bend in the curvature controllable portion, characterised in that a means is provided for constraining the first and second members to move parallel to each other for inducing the curved bend in the curvature controllable portion.

49. A method for forming an elongated guide wire for use in a surgical or other procedure for accessing a remote site in the body of a human or animal subject, the method comprising the steps of providing a guide wire defining a longitudinally extending central axis and extending between a distal end for accessing the remote site and a spaced apart proximal end, locating a curvature controllable portion in the guide wire towards the distal end thereof for offsetting the distal end at an angle relative to the central axis, and providing the curvature controllable portion with an elongated curvature inducing first member and an elongated curvature inducing second member coupled to each other adjacent their distal ends, so that the first and second members extend from their distal ends axially in a proximal direction, and are moveable axially relative to each other for inducing a curved bend in the curvature controllable portion, characterised in that a means is provided for constraining the first and second members to move parallel to each other for inducing the curved bend in the curvature controllable portion.

50. A method as claimed in Claim 49 characterised in that the first and second

members are disposed side by side and are slideably moveable axially relative to each other.

51. A method as claimed in Claim 49 or 50 characterised in that the means for constraining the first and second members to move parallel to each other is provided by a guide tongue extending laterally from the second member and being slideably engageable with an axially extending corresponding guide groove in the first member.